

T SOGANG

A public health magazine highlighting the United States - Botswana partnership
1st Issue, April 2014



Infant Circumcision: A giant leap towards an HIV-Free Generation



When Kopano Matlhape gave birth to a new baby boy on January 3rd, she called him Tyrone – a name with Greek origins meaning “sovereign” – to let the world know there was a new king in town. Like any new parent, she has big dreams for her son’s future and couldn’t help giving him a name that reflected that sentiment.

Above all, the young mother wants to ensure her little king grows up healthy, which is why she decided to have Tyrone circumcised. As a parent of a child in Botswana, a nation with the second highest HIV prevalence in the world, the decision just might save his life.

“I wanted to give him the chance to live freely and not worry as much about diseases,” the 22-year-old mother said, referring to the studies that have shown circumcision helps decrease the risk of HIV and other sexually transmitted infections in males. “Of course, we know this doesn’t mean he is free to do anything, but it does give him a head start in the world.”

Baby Tyrone was among the first infants in Botswana circumcised with one of two newly introduced medical devices for infants rolled out by the Ministry of Health earlier this year. Doctors and midwives were trained in January by experts from the U.S. Centers for Disease Control and Prevention (CDC). The new procedure is bloodless and requires no anesthesia or suturing.

Health officials say that not only will infant circumcision help protect boys from HIV when they become sexually active later in life, but that it also protects infants and boys from serious health complications such as urinary tract infections and paraphimosis, a condition that can lead to pain and swelling of the

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Combination Prevention Begins In Village with its own Vibe

Digawana is a lot like the dozens of other villages dotting the desert landscape of southeast Botswana: It is small, quiet and unassuming with the familiar sight of donkeys and goats lining the road that runs through it.

The residents of Digawana, however, say their village is a place like no other. A Facebook page dedicated to the village calls it the “land of air & rhythm ... the place with its own vibe.” A letter to a local newspaper describes it as “the talent hub of the nation” and boasts that Digawana (with an estimated 3,300 residents) has produced football stars, jazz maestros and even a former Auditor General.

Last year, Digawana took on another identity – it became a partner in one of the most important HIV prevention studies of this decade. The Botswana Combination Prevention Project, also known by its Setswana name *Ya Tsie*, aims to drastically reduce new HIV infections in communities like Digawana.

An estimated 300,000 people are



living with HIV in Botswana. This has led public health experts to call for a “combination prevention” strategy that involves combining and strengthening multiple HIV interventions, both known and new. If the strategy works and is cost-effective, Botswana’s program could be a model for other African nations.

“I was very proud that my village was

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Combination Prevention Begins In Village with its own Vibe



Kgosi Kgwakgwe of Digawana

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chosen to be a part of this study," says Kgosi Kgwakgwe, the village chief of Digawana, one of the first study villages in the four-year project. "What they are doing is very important, and we have never had anything like this in Digawana before. We are proud to lead the way."

Ya Tsie is a shortened form of a longer Setswana proverb, "Kgetsi ya tsie e kgonwa ke go tshwaraganelwa," which means that teamwork bears more fruit than individual effort. It represents the way that combination prevention works, with many interventions working together towards the common goal of stopping new HIV

infections.

Ya Tsie also refers to the many partners involved, including the Botswana Ministry of Health, the U.S. Centers for Disease Control and Prevention (CDC) and Botswana Harvard Partnership. But perhaps the most important partners to the study are the communities.

Thirty communities from three regions in Botswana have been selected. In half of them, large numbers of community mobilizers will go house-to-house, promoting prevention services like HIV testing and counseling, antiretroviral therapy, male circumcision and Prevention of Mother-to-Child Transmission (PMTCT). HIV care and treatment clinics in all 30 communities are receiving improvements in medical data systems and in management of supplies and equipment.

Although Kgosi Kgwakgwe has never heard Digawana described as the "land of air & rhythm," he agrees that his village carries its own vibe. Historically, Digawana is a diverse mix of cultures and tribes that have converged in one place. "There are many different kinds of people who have come to live here, but they are good people and we get along very well."

When the *Ya Tsie* team moved into Digawana late last year, Kgwakgwe was initially worried that hosting a study team in his small community would be a challenge. Water shortages and accommodation were on his mind, but he was mainly concerned that members of the study team might disturb the peaceful balance – a concern that was quickly put to rest after he met them.

"They did things in the right way. They came to me and explained what was going to happen, and allowed me to introduce them to my community," he said. "That's how our culture works; you must consult with us first."

In February 2014, former U.S. Ambassador Michelle Gavin visited Digawana and met with Kgwakgwe and his staff to thank them for their involvement in *Ya Tsie*. The U.S. government, through the President's Emergency Plan for AIDS Relief (PEPFAR), is supporting the study with \$64 million and is expecting big things from the partnerships, she said.

"It could very well be the most important thing any of us do over the next decade in response to HIV and AIDS," Ambassador Gavin said.

For his part, Kgwakgwe told the Ambassador he was happy with how the study team had engaged with Digawana residents, and proud of his community's enthusiastic participation.

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Members of the Ya Tsie study team posing in Digawana (photo courtesy of Galina Stolarsky)

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The Ya Tsie team has departed Digawana for now with plans to return next year. But Kgwakgwe says the team left his community better off than when they found it – more people now know their HIV status and have been linked with life-saving services. Kgwakgwe says he would encourage other study communities to accept the team with open arms.

“Look, this is a good thing. Allow them to get into your village because this is very important study and people need this knowledge,” he says. “They can learn something from us.”

“It could very well be the most important thing any of us do over the next decade”



Digawana: A village with its own vibe



Frequently Asked Questions about Ya Tsie

1. What is the Ya Tsie study about?

Botswana has agreed to host an HIV prevention study to evaluate whether coordinated and strengthened community-based HIV prevention methods prevent the spread of HIV better than the standard methods that are offered individually today. The overall goal of the study is to reduce new HIV infections at the community level, and to determine whether this method is cost-effective.

2. Who is involved in this study?

The Botswana Ministry of Health, the Harvard School of Public Health through the Botswana-Harvard Partnership, and the U.S. government, through the U.S. Centers for Disease Control and Prevention are collaborating on this four-year project. The study is funded by the U.S. government through the President's Emergency Plan for AIDS Relief (PEPFAR).

3. How were the study communities selected?

Thirty communities have been selected from three broad geographic regions in Botswana (Southern, Central, and North). The average population size of each community is 6,000 residents (ranging from 2,400-12,000). The eligible study participants are adults aged 16-64. Communities were selected to be large enough to meet sample size requirements yet not too large to avoid unfeasible targets.

4. How is this study designed?

The design of the Ya Tsie study is called a pair-matched community randomized trial. This means that communities within the study will be paired with one another based on their geographic location and population size. Villages in each pair will be randomly assigned as either Enhanced Care Communities (ECCs) or Combination Prevention Communities (CPCs).

5. What are the benefits to people living in the participating communities?

Enhanced Care Communities will receive additional testing and monitoring, and assurance that their regular health care services will be delivered optimally. Combination Prevention Communities will receive household visits by community mobilizers to promote combination prevention services, including HIV testing and counseling (HTC), antiretroviral therapy (ART), safe male circumcision (SMC) and Prevention of Mother-To-Child Transmission (PMTCT). In addition, HIV treatment and care services will be expanded in the CPC villages to reach HIV-infected individuals with high viral loads (>10,000 copies/ml), and women who take ART for PMTCT will be targeted to receive lifelong treatment as a strategy for reducing HIV transmission risk.

6. When is the study starting and ending?

Study initiation in the first communities started in late October 2013. The planned study duration in most communities is for approximately 4 years.

Fighting Cervical Cancer



Two years ago, Dr. Mmakgomo "Mimi" Raesima was put in charge of cervical cancer prevention at the Ministry of Health with the task of figuring out how to end its reign as the No. 1 cancer killer of women in Botswana.

This was no easy task given that cervical cancer accounts for more than a quarter of all cancer in Botswana women. Worldwide, about half a million women are diagnosed with cervical cancer every year and around 275,000 women die from the disease, 85% of whom live in low- and middle-income countries.

Undeterred by these challenges, Dr. Raesima has taken the reins and set into motion a new prevention and control strategy with some innovative and cost-effective techniques for fighting cervical cancer in Botswana, including two unlikely weapons: vaccines and vinegar.

With support from partners including the U.S. government, Dr. Raesima plans to scale-up "See and Treat" clinics where women are screened for cervical cancer, diagnosed and treated all in one visit. The clinics use a remarkably simple and low-cost acetic test – otherwise known as household vinegar – to screen for cancerous cells in women.

Meanwhile, plans are moving ahead to vaccinate young Botswana women against the human papillomavirus (HPV), the cause of cervical cancer. Last year, more than 2,000 girls between the ages of 9-11 were voluntarily vaccinated in a demonstration project in Molepolole schools. This year starting in March, the HPV vaccine was being offered in Kweneng East, Kweneng West and Selibe Phikwe districts.

"Botswana is becoming a leader in the response to cervical cancer and that is exciting," Dr. Raesima said in a recent interview.

Partnerships between the Government of Botswana and the United States through the President's Emergency Plan for AIDS Relief (PEPFAR) and the Pink Ribbon Red Ribbon Initiative (PRRI) have helped to put the strategy into motion, Raesima said. "The reason that we are moving ahead so quickly is because of this support. It's what's driving our strategy."

HIV poses another test to cervical cancer prevention. Nearly 30% of women between 15-49 years are estimated to be HIV infected. Women living with HIV are more susceptible to HPV infection and cervical cancer is more aggressive in HIV-infected women. Unfortunately, the incidence of cervical cancer has not diminished since the introduction of antiretroviral therapy as it has with Kaposi sarcoma and other cancers.

The five-year comprehensive prevention and control strategy (2012-2016), launched

with Vaccines and Vinegar



last year by the Ministry of Health, plans to attack these challenges with a robust and sustainable plan that finally puts cervical cancer on the priority disease hit-list for the country.

“Cervical cancer is now one of the priority disease targets for Botswana,” Ms. Shenaaz El-Halabi, Deputy Permanent Secretary in the Ministry of Health, said during the August 2013 launch of the strategy. “Now is the time to scale-up our response in a coordinated and innovative way.”

Screening for Cervical Cancer

For the past 20 years, the Pap smear has been the only available method of screening for cervical cancer in Botswana. The technique was invented in the 1920s by George Papanicolaou and involves a doctor taking a scraping from the lining of the cervix and sending it to a lab to be analyzed under a microscope. It is an expensive and time consuming technique, and when clients go home to wait for their results many are lost to follow-up and never seen again.

“Multiple visits and transportation for clients to and from the clinics and hospitals became an issue,” Dr. Raesima said. “Also, we never had a good plan in place for treatment.”

In 2011, the Ministry of Health supported a CDC consultant’s recommendation to endorse the addition of “VIA/cryo” which stands for visualization of the cervix with acetic acid and treatment with cryotherapy. Nurses using the procedure brush vinegar on a woman’s cervix which makes

precancerous spots turn white. The tiny, seed-like spots can then be immediately frozen off with a metal probe cooled by a tank of carbon dioxide.

“We show the woman the picture and say, ‘This is your cervix. Here is the abnormality and we can freeze it today, immediately, getting rid of that seed that could cause cancer.’ The women overwhelmingly agree to treatment,” said Dr. Doreen Ramogola-Masire, director of the Botswana UPENN Partnership which first piloted “See and Treat” at a clinic in Gaborone.

Around 6,000 women have so far been screened through “See and Treat,” says Ramogola-Masire. The clinics are sponsored with PEPFAR funding and implemented through the Ministry of Health and the Botswana-UPENN Partnership. In 2012, Former President George W. Bush visited Botswana to announce \$3 million for the scale-up of clinics through PRRR beyond Gaborone. The program has since extended services to Francistown, and plans are underway this year to expand to sites in Mahalapye, Selibe-Phikwe, Lobatse and Maun.

“Botswana is becoming a leader in the response to cervical cancer and that is exciting,”

HPV Vaccine

Primary prevention of cervical cancer involves prevention of the HPV infection. Dr. Raesima says this is achieved through social mechanisms like education and awareness campaigns to reduce high-risk sexual behavior. Another way is through biological mechanisms, including the HPV vaccination.

Last year, the Ministry of Health officially launched the HPV vaccine demonstration

project targeting students from 23 primary schools in Molepolole. The demonstration project came two years early as a result of a funding agreement between Botswana and the World Bank. Other technical support came from the United States and a donation of vaccine doses from corporate partner Merck through PRRR. Dr. Raesima says she hopes to roll out the vaccine to the rest of the country by 2015.

In the second demonstration phase this year, the Ministry is targeting both school-going and out-of-school girls between 9-13 years old. The vaccines are being rolled out in Kweneng East, Kweneng West and the Selibe-Phikwe districts, this time under the National Immunization Program as part of its larger mission of strengthening school health programs. “It makes sense, for the sustainability of the HPV vaccine,” Dr. Raesima said.

The fight against cervical cancer in Botswana will, of course, take more than vaccines and vinegar. The objectives of the national strategy also feature health-systems strengthening, health promotion, treatment and palliative care. Still, the introduction of the HPV vaccine and scale-up of “See and Treat” clinics are two vital pieces that help form a concerted and bold effort to combat the disease.

Dr. Raesima says the goal is clear: “We are simply trying to save more lives.”



World TB Day



Every year nearly nine million people worldwide develop active tuberculosis. More than a million lives are lost, and hundreds of thousands are co-infected with HIV. In Botswana, as many as 63 percent of TB patients are co-infected with HIV.

On March 24, Botswana recognized these challenges during a national event in Molepolole to commemorate World TB Day. In a keynote address, Dr. Kathleen Toomey, Director of CDC Botswana, acknowledged the importance of research partnerships that have led to improvements in prevention and control of TB.



Ms. Shenaaz El-Halabi, a Deputy Permanent Secretary in the Ministry of Health, and Dr. Kathleen Toomey, CDC Botswana Country Director



Traditional dancers from Prisons, some of them inmates, at the Lewis Grounds in Molepolole during the World TB Day event

A High-Tech Approach to an Age-Old Problem

A new, cutting-edge diagnostic tool that helps detect TB in hours instead of days or weeks is being studied at 26 sites in Botswana in hopes of improving TB detection time and getting more people treated faster.

TB remains the leading killer of people living with HIV (PLHIV). In 2012, as many as 63% of TB patients in Botswana were co-infected with HIV. Additionally, Botswana faces a growing threat from multidrug-resistant (MDR) TB, a disease that is much more difficult to diagnose and successfully treat.

Until recently, health providers routinely relied on smear microscopy, a diagnostic tool developed more than 100 years ago, to detect TB in the sputum of patients. But this method can miss many TB cases — especially among PLHIV — and does not detect drug resistance. Other diagnostic methods can detect drug resistance, but it can take many weeks or months to receive results.

It is hoped that a newly introduced diagnostic tool, called Xpert MTB/RIF, will help Botswana TB patients be treated as

soon as possible through the rapid and accurate detection of TB disease and drug resistance. Thus, Xpert MTB/RIF may enable patients to be treated more quickly and, ultimately, save more lives.

Xpert MTB/RIF is a molecular test that uses a DNA probe in a sealed test kit to detect TB in sputum with greater sensitivity than traditional tests, while also detecting resistance to rifampicin, one of the most effective first-line TB drugs, much more quickly. The test can be performed simply and safely by minimally trained staff, with results in approximately 2 hours as compared to the days or weeks that it took before.

The U.S. government and the Botswana Ministry of Health have partnered to embark on an evaluation called XPRES (Xpert Package Rollout Evaluation Study) of the first 13 Xpert devices used in Botswana. The study's objectives are to 1) compare the sensitivity of the new Xpert diagnostic tool versus the older smear microscopy-based diagnostic tool when providing TB screening for PLHIV, and 2) evaluate the impact of Xpert on mortality rates of patients newly enrolled

in antiretroviral therapy (ART).

The study began in August 2012 and, to date, more than 9,700 participants have been enrolled. Machines have been placed in 12 districts covering 26 HIV care and treatment clinics. Lessons learned from the initial rollout have informed the recent expansion of 18 additional machines across Botswana.

Developing a successful new testing procedure in Botswana should help contain the spread of TB, which, in addition to saving lives here, could have an important public health benefit elsewhere in Africa and in the rest of the world.



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penis and may require surgery.

"He was a brave little boy," said Matlhape about her son's experience. "I really expected he would be crying the whole day and night, but he was just quiet. It was a fairly quick procedure, and I am happy we did this."

The rollout of Early Infant Male Circumcision in Botswana may be one of several indications that the Safe Male Circumcision (SMC) program – once hampered by negative media portrayals – has turned a corner in Botswana.

Between April 2013 and February 2014, the national SMC program recorded 42,679 circumcisions, about 85% of its annual target and 10,000 more than the previous year.

More targeted demand creation campaigns and a fleet of new mobile outreach clinics may help explain the recent upsurge in voluntary circumcisions in Botswana. Or perhaps it's the promise of new SMC devices that make the procedure easier and faster.

Conrad Ntsuape, the national coordinator of Safe Male Circumcision in the Ministry of Health, would rather say that the improvements are part of the natural growth experienced by any program.

"When you start a new program you expect a low turnout at first, but when the program begins to mature then you would expect to see people start coming in larger numbers," said Ntsuape. "Our challenge now is one of service provision. We can't meet all of the demand that we are creating."

The U.S. government through the President's Emergency Plan for AIDS Relief (PEPFAR) has supported Botswana's SMC program from its inception in 2009 with nearly \$25 million and technical assistance over the past five years. In 2013, PEPFAR restructured its support to a single-partner model and chose Jhpiego, a development organization affiliated with Johns Hopkins University, as the single implementing partner for all CDC-funded activities related to the SMC program.

A new communications strategy has helped improve and focus demand creation, Ntsuape says. School-based campaigns have been especially successful, but so have the house-to-house campaigns that allow mobilizers to engage with men on a personal level. "The key there is the interpersonal communication. You are reaching them at home, with their families, and there is a component of counseling involved there," he said.

In October 2013, the World Bank purchased five mobile SMC clinics for the Ministry of Health to reach remote areas of the country. The mobile clinics are based in Tsabong, Letlhakeng, Maun, Serowe and Kasane with the District Health Management Teams (DHMTs) placed in charge of them.

The government also plans to roll out the PrePex male circumcision device following the completion last year of a six-month pilot study sponsored by PEPFAR. The medical device is placed on the penis with no cutting of the foreskin involved, and allows men to continue working with the device in place for seven days.

As for infant circumcisions, the national program began in late January and has already recorded more than 250 completed procedures. The two new devices, Mogan Clamp and AccuCirc, are being administered on healthy newborns as early as eight hours after birth. With help from CDC Botswana, the MOH is training doctors and midwives – as the first line of contact with babies at maternity clinics – in Gaborone, Ramotswa, Mochudi and Francistown.

"If we can integrate infant circumcision into the maternity wings and convince mothers that this is a good idea, this one can be a big win," says Ntsuape.



"I wanted to give him the chance to live freely and not worry as much about diseases...it does give him a head start in the world."

Kopano Matlhape, 22-year-old mother on her decision to circumcise her new baby boy, Tyrone

On a Mission to Save Babies



Ms. Catherine Motswere-Chirwa

An interview with the determined Catherine Motswere-Chirwa, whose work features in CDC's Morbidity and Mortality Weekly Report (MMWR)

In Botswana, 30 percent of pregnant women are infected with HIV. Although Botswana has reduced mother-to-child transmission of HIV from 40 percent to less than 4 percent, hundreds of infants are born infected with HIV each year. The Early Infant Diagnosis Program (EID) was started to quickly diagnose infants and start them on antiretroviral treatment.

To evaluate the program, Ms. Catherine Motswere-Chirwa of the Centers for Disease Control and Prevention (CDC Botswana) went through hospital records to track down all 202 HIV-infected infants who were diagnosed from 2005 through 2012 around Francistown. Only 75 percent of mothers ever received their infant's HIV test results and 60 percent ever received

antiretroviral treatment. By late 2013, 41 percent of these infants were known to be alive.

The study, "Follow-Up of Infants Diagnosed with HIV — Early Infant Diagnosis Program, Francistown, Botswana, 2005–2012" was featured in the Feb. 21 edition of MMWR. An interview with Ms. Motswere-Chirwa follows:

Tell us about yourself. Where are you from and how long have you worked with CDC?

I originate from Tonota village and grew up in Francistown (Botswana). I am married to Dr. Lovemore Chirwa (a senior physician researcher with CDC Botswana) from Kitwe, Zambia. I joined CDC Botswana in May 2005. During my first week with CDC, Dr. Tracy Creek arrived from Atlanta to start the EID pilot study. I was involved in training health care workers, data collection, counselling and, of course, follow-up of infected infants.

What triggered your interest in this subject?

My main interest in this study was to try and save as many babies as possible. EID was able to inform us that at least 96 percent of our infants exposed to HIV were born free from infection, and I was determined to see that even those who were infected were able to receive care, treatment and support they needed to live longer — just like adults.

Were the results of this study surprising to you?

The results were kind of shocking to me. On a yearly basis, we were reporting results and I would become very emotional when I noticed the high number of infants who were dying and those who were lost to follow-up. At the same time, I was consoled by the fact that those infants who were started on treatment from as way back as

2005 were alive and doing very well.

What lessons do you hope readers learn from the results of this study?

The lesson is that with rigorous follow-up of infants, all of our babies can live a healthy, longer life just like adults. Integration of services is very important to allow patients to seek help in a one-stop shop. We need to put mechanisms in place to ensure that all infants are referred and seen and started on treatment on time. For those on treatment, we have to ensure that they stay on treatment.

What is the most satisfying aspect of having worked on this study?

Maybe we have lost a lot of children, but we should not lose sight of the number of children who never acquired HIV and those who are HIV-infected and doing well on antiretroviral therapy. It's the successes that should keep us all going.

Is there anything else you would like to share with us?

I want to appreciate each and every one who was involved in this study: the CDC team, Francistown DHMT and Nyangabgwe Referral Hospital. A special appreciation to all those individuals who believed in me and in what I was doing, including Dr. Tracey Creek, Ms. Lydia Lu, Dr. Thierry Roels, Dr. Molly Smit, Dr. Kathleen Toomey, Dr. Andy Pelletier, Dr. Drew Voetch and, of course, my husband, Dr. Lovemore Chirwa.

Ms. Motswere-Chirwa is currently a Program Manager for the Project AIM Study at CDC Botswana in Gaborone. The EID study can be found on the MMWR website: <http://www.cdc.gov/mmwr/>

About Tsogang

Taken from a Setswana greeting that means "good health to you," *Tsogang* is a new public health magazine highlighting the United States-Botswana partnership. Since 1995, the U.S. Centers for Disease Control and Prevention (CDC Botswana) has worked in partnership with Botswana towards the vision of an HIV-free generation. Suggestions and comments on this newsletter can be emailed to **Doug Johnson, Senior Communications Officer for CDC Botswana**, at ixf7@cdc.gov.

